Level 2 Functional Skills Mathematics

Sample paper 2

A City & Guilds Group Business
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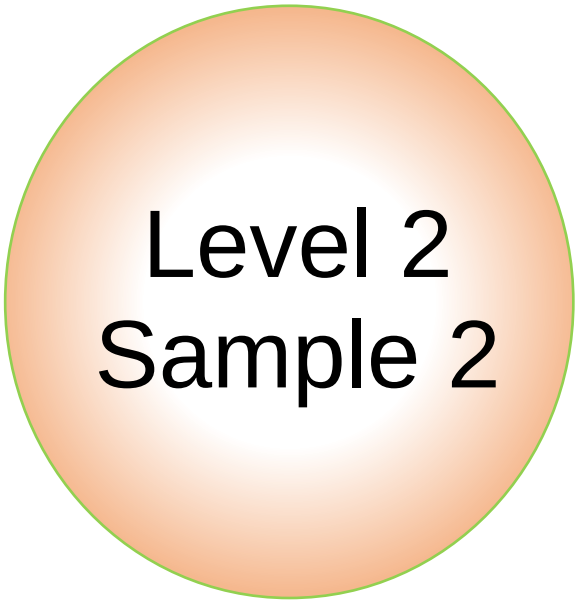
Version 1.1

Mark scheme
VERSION 1.1



Guidance notes for Mark Schemes
Level 1 and Level 2

The mark scheme has been carefully constructed to avoid penalising candidates repeatedly for similar errors.

1) The principle of follow through applies throughout unless otherwise stated. This allows the candidates to gain credit for subsequent correct calculation based on a previous incorrect answer. There is no follow-through between questions, but may be in multi-stage calculations within a question.

2) Units or numbers shown in brackets on the mark scheme are not required for the awarding of mark/s on the candidate's paper. However, if a candidate states units they must be correct:
eg 24(cm) means accept 24cm or 24 but not 24m
eg (£)72.5(0) means accept £72.50 or £72.5 or 72.50 or 72.5

3) Correct money format is expected in final answers unless otherwise indicated eg by brackets ie pounds must have two decimal places or no decimal places unless otherwise stated.
eg (£)5.00 or (£)5 not (£)5.0
eg (£)72.50 not (£)72.5
eg (£)37.43 not (£)37.432

4) URT means unrounded, rounded or truncated; the underlining defines the acceptable limit of approximation:
eg 860. *8652* URT (U is the unrounded version)
the following are acceptable: 860 (T) or 861 (R) 860.8 (T) or 860.9 (R) or 860.86 (T) or 860.87 (R) or 860.865 (R) or 860.8652 (U) but not eg 900.

The 3rd and 4th columns of the mark schemes show the marks to be given for specific responses. Marks in bold are for fully correct answers. Where full marks are not achieved award the marks that correspond to the responses given in the grey rows below.

Where marks are awarded for a *complete correct method with one calculation error* give the mark for a substantially correct solution with a single accuracy error or single (or consistent) early rounding, but not with a method error.

Maths Level 2 Sample paper 2: Section 1 – CALCULATOR NOT PERMITTED					
Examiners should accept correct answers given as words, including misspelt variants. Candidates must not lose marks for incorrect spelling.					
Question	**Total marks**	**Marks**	**Marks awarded for**	**Item type**	**Subject content statement reference**
1	**1**	**1**	**1/6**	UPK Short answer fixed response	SCS8 [1]
2	**1**	**1**	**D**	UPK MC fixed response	SCS4 [1]
3	**1**	**1**	**45(º)**	UPK Short answer fixed response	SCS22 [1]
4	**1**	**1**	**36**	UPK Short answer fixed response	SCS3 [1]
5	**1**	**1**	**– 25**	UPK Short answer fixed response	SCS12 [1]
6	**1**	**1**	**1540(cm^3)** see below for example workings	UPK Short answer fixed response	SCS17 [1]
7	**1**	**1**	**C**	UPK MC fixed response	SCS7 [1]
8	**1**	**1**	**90**	UPK Short answer fixed response	SCS10 [1]
9	**1**	**1**	**72(mm)**	UPK Short answer fixed response	SCS16 [1]
10	**1**	**1**	**1/8**	UPK Short answer fixed response	SCS26 [1]
11	**1**	**1**	**No AND (£)15.30 (extra) seen**	Problem solving Short answer fixed response	SCS15 [1]
12	**2**	**2**	**Yes AND 128kph or 81.25mph seen**	Problem solving short answer fixed response	SCS14 [1] SCS15 [1]
		1	method for converting mph to kph eg 80 ÷ $\frac{5}{8}$ **or** method for converting kph to mph eg 130 x $\frac{5}{8}$		
13	**2**	**2**	**30 000(cm^3) (from 25 x 30 x 40)**	Problem solving Short answer fixed response	SCS2 [1] SCS17 [1]
		1	volume derived from other approximated measurements eg 20 x 30 x 40 = 24 000(cm^3) or 28 536(cm^3) derived from actual measurements		
				Total for Section 1	**15 marks**

Example workings for S1Q6

$$V = \pi r^2 h$$

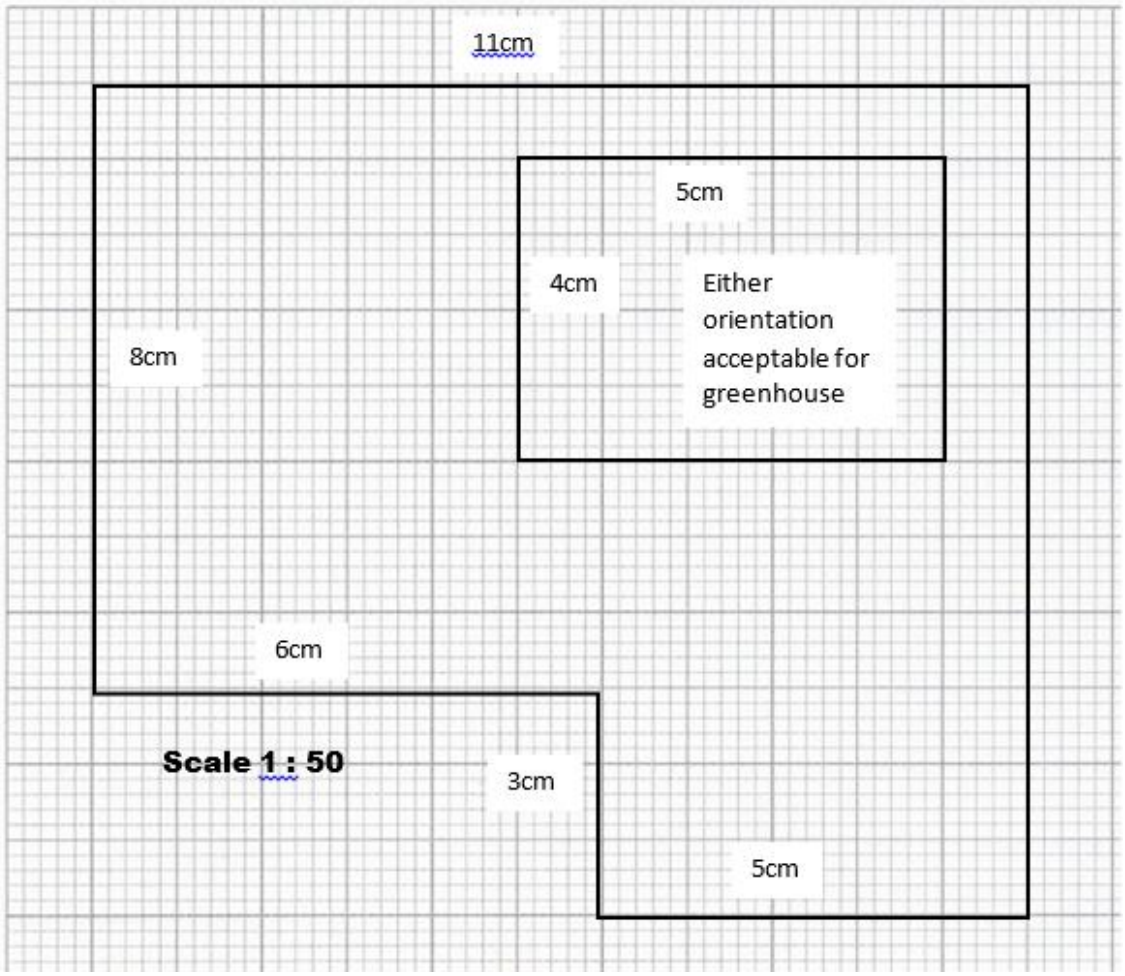
$$V = \frac{22}{7}\ x\ 49\ x\ 10$$

$$V = \frac{22}{\cancel{7}}\ x\ \cancel{49}\ 7\ x\ 10$$

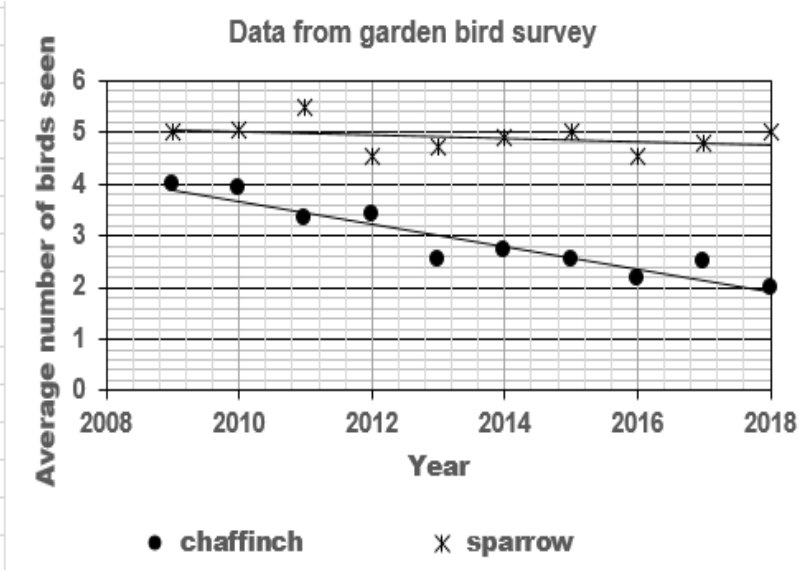
$$V = 1540$$

Maths Level 2 Sample 2 paper: Section 2 – CALCULATOR PERMITTED					
Examiners should accept correct answers given as words, including misspelt variants. Candidates must not lose marks for incorrect spelling.					
Question	**Total marks**	**Marks**	**Marks awarded for**	**Item type**	**Subject content statement reference**
1	**1**	**1**	**9.68**	UPK Short answer fixed response	SCS2 [1]
2	**1**	**1**	**0.034**	UPK Short answer fixed response	SCS8 [1]
3	**1**	**1**	**C**	UPK MC fixed response	SCS21 [1]
4	**1**	**1**	**D**	UPK MC fixed response	SCS14 [1]
5	**1**	**1**	**0.4**	UPK Short answer fixed response	SCS27 [1]
6	**1**	**1**	**No AND suitable explanation** **eg data skewed to left** **eg the right hand side is bigger than the left** **eg more than half runners have times > 4hrs**	Problem solving Short answer open response	CHECK [1] (SCS24)
7	**3**	**3**	**YES AND suitable explanation with reference to (£)30 (for original price)** **AND (£)15 (for half price) AND (£)15.75 (for the new price)** **accept 75p for the difference equivalent to (£)15 and (£)15.75** **Accept general explanation showing that a 25% reduction on 70% price gives 52.5% price**	Problem solving Short answer open response	SCS13 [3]
		2	(£)30 or (£)15 **and** (£)15.75		
		1	(£)30 **or** (£)15 **or** (£)15.750		
8	**4**	**4**	**197.*82*(cm^3) URT**	Problem solving Short answer open response	SCS3 [1] SCS17 [3]
		3	56.52 (cm$^{3)}$ (for hemisphere) **and** 141.3(cm$^{3)}$ (for cylinder) or complete correct method with one calculation or rounding error		
		2	56.52 (cm^3) for hemisphere		
		1	141.3(cm^3) for cylinder or correct substitution in to formula for hemisphere		
9	**4**	**2**	**full outline ie six sides drawn ± ½ small square to suitable scale, scale shown**	Problem solving Short answer open response	SCS18 [3] SCS20 [1]
		1	at least four lines drawn correctly to scale ± ½ small square **or** six side drawn to scale, but no scale shown		
		2	**outline of greenhouse drawn to scale ± ½ small square in correct position ie in top right hand corner 50cm from each edge of the garden**		
		1	outline of greenhouse drawn to scale anywhere ± ½ small square		

Example plan for S2Q9 (drawn to scale 1 : 50, other scaling acceptable)



10	**4**	**4**	**88p or £0.88**	Problem solving Short answer open response	SCS11 [2] SCS13 [2]
		3	88 or 0.88 without units **or** £132 for ingredients plus charity money ÷ 150		
		2	value for their ingredients plus charity money ÷ 150 **or** £132 for ingredients plus charity money		
		1	25 (packs of buns) and 19 (tins of hotdogs) or value for their ingredient plus charity money or ÷ 150 seen or ÷ 8 and ÷ 6 seen		
11	**4**	**3**	**67.28(g) for A**	Problem solving Short answer open response	SCS24 [4]
		2	6728 for ∑fx **and** 100 for n **or** complete correct method with one calculation or rounding error		
		1	6728 for ∑fx **or** 100 for n **or** any three values for fx **ie** three of 1408 1782 1768 1050 720 **or** any three values for mid points **ie** three of 64 66 68 70 72		
		1	**supplier A AND explanation** **eg 67.28 > 66.5g** **eg supplier B 0.78g less (on average)**		
12	**4**	**3**	**(£)5202 for A AND (£)5157.50 for B**	Problem solving Short answer open response	SCS13 [4]
		2	(£)5202 **or** (£)5157.50 **or** complete correct method with one calculation or rounding error		
		1	(£)5100 for A (for first 6 months) **or** method for one percentage seen eg x1.0315 or x 2/100		
		1	**Bank A and explanation** **eg (£)5202 > (£)5157.50** **eg Bank B interest is £44.50 less (than Bank A)**		

13	**5**	**2**	**values for two percentage changes ie 50% decrease (chaffinch) and 0% change (sparrow)**	Problem solving Short answer open response	SCS5 [1] SCS6 [2] SCS28 [2]
		1	value for one percentage change		
		1	**two trend lines drawn accept lines drawn with approximately the same number of plots either side of the line**		
		2	**two valid comments one referring to the trend for chaffinch and one referring to the trend for sparrow**		
		1	one valid comment referring to one of the trends **or** both correlations stated without reference to context		
					
14	**5**	**2**	**91(Dave) AND 90(Elaine) for medians *do not accept values for means***	Problem solving Short answer open response	SCS23 [2] SCS25 [3]
		1	91(Dave) **or** 90(Elaine) for medians		
		1	**54 (Dave) and 22 (Elaine) for ranges**		
		2	**a valid justification for choice of player with reference to median scores (good scoring) AND range (consistency) eg Elaine more consistent 22 < 54 and median score 90 similar to Dave (91) *note: accept justification based on their results (including calculation of mean)***		
		1	a valid justification for choice of player with reference to median scores (good scoring) **or** range (consistency)		

15	**6**	**6**	**correct time for leaving consistent with a distance from 12 cm to 15 cm measured on map,** **eg 4:21pm or 4:20pm or 16:21 or 16:20**	Problem solving Short answer open response	SCS15 [3] SCS18 [2] SCS19 [1]
		If 6 marks not achieved apply the following mark scheme below			
		3	**value for distance travelled in km ie value between 3km (from 12cm measured) and 3.75km (from 15cm measured)**		
		2	value for distance travelled in cm ie value between 300 000cm (from 12cm measured) and 375 000 cm (from 15cm measured) **or** their incorrect distance converted to correct kilometres		
		1	distance between 12cm and 15cm for their map measurement **or** their incorrect distance converted to correct centimetres **or** method for converting cm to km **eg** ÷ 1000 and ÷ 100 or ÷ 100000 **or** x 25 000 seen to calculate scale		
		2	**value for time for journey in minutes**		
		1	method for time taken eg their distance ÷ 5 kph **or** x 60 to convert decimal hours into minutes		
		1	**5pm less their time for journey**		

Sample results based on distances of 12cm to 15cm

Distance on map (cm)	12	12.5	13	13.5	14	14.5	15
Convert to cm	300000	312500	325000	337500	350000	362500	375000
Convert to km	3	3.125	3.25	3.375	3.5	3.625	3.75
Journey time hrs	0.6	0.625	0.65	0.675	0.7	0.725	0.75
Journey time mins	36	37.5	39	40.5	42	43.5	45
Time of arrival	4:24 PM	4:23 or 4:22PM	4:21 PM	4:20 or 4:19PM	4:18 PM	4:17 or 4:16PM	4:15 PM

Total for Section 2 45 marks

Indicative Pass Mark 35/60